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Engage Hub- Club Event Management

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Abstarct

This paper presents the design and implementation of *College Club Management*, an online platform developed to streamline and enhance the management of student clubs and events within academic institutions. The system provides a centralized interface where students can create profiles, register for events, and receive real-time updates and notifications about upcoming activities organized by various college clubs. Simultaneously, club organizers can use the platform to host meetings, schedule events, and share announcements, ensuring transparent and effective communication with participants. This initiative fosters student engagement and encourages active participation through features like in-app event results and recognition of winners. The platform is built using JavaScript as the core language, with React for the front-end, Node.js and Express for the back-end, and PostgreSQL for data management. The user interface design was crafted using Fig-ma, incorporating visual elements from the Icons8 plugin. This project demonstrates how a well-integrated web application can improve collaboration, coordination, and involvement within a college ecosystem.

Keywords—College club management, student engagement platform, event registration system, online event coordination, React frontend development, Node.js backend architecture, Express framework, PostgreSQL database management, JavaScript web application, Figma UI design, Icons8 integration, real-time notifications, student participation tracking, club event scheduling, digital campus solutions

I. INTRODUCTION

This In today's digital era, the integration of technology into academic environments is crucial for improving communication, collaboration, and participation among students. One of the commonly overlooked areas in campus life is the management and promotion of student-run clubs and their events. Traditional methods of announcing club meetings and events—such as notice boards or social media posts—often result in poor communication, missed opportunities, and limited student engagement.

To address these challenges, we developed an online platform titledEngage hub club event management , designed to act as a centralized system for managing all club-related activities within an academic institution. The platform enables students to create individual accounts, register for events, receive timely notifications about upcoming programs, and track event outcomes. It also empowers club organizers with tools to host meetings, post announcements, schedule events, and publish winners directly on the platform.

This application not only ensures transparency and organized event communication but also promotes inclusive and active participation among students. By recognizing winners and highlighting participation within the platform, it creates a motivating environment for students to get involved in extracurricular activities. From a technical perspective, the platform is built using modern web development technologies. JavaScript serves as the core programming language, with React used for the frontend interface and Node.js along with Express for the backend services. PostgreSQL has been employed for efficient database management. The user interface was designed in Figma, with visual assets and icons sourced using the Icons8 plugin to enhance the overall user experience. This paper discusses the motivation, design, development, and impact of the College-club Management system, highlighting its potential to become a vital digital tool for campus engagement and event coordination

II. LITREATUR REVIEW

An Student club management and event coordination have traditionally relied on manual processes such as physical notice boards, emails, or scattered social media platforms. While effective to some extent, these methods are often inconsistent and fail to provide a unified communication channel for students and organizers. Recent studies emphasize the importance of digital platforms in enhancing communication and fostering engagement in academic institutions.

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In the evolving landscape of higher education, student engagement and participation in extracurricular activities are increasingly recognized as vital contributors to personal and professional development. However, the traditional methods of managing college clubs and promoting events—such as physical notice boards, social media groups, or word-of-mouth—are often uncoordinated, inefficient, and inaccessible to a large portion of the student population.

Equally important is the role of UI/UX design in creating intuitive digital environments. Platforms built with user-centric tools like Figma and enriched with visual assets from libraries like Icons8 have been shown to enhance usability and user satisfaction. A clean, well-organized interface not only encourages first-time users but also promotes repeated engagement.

Recognition of student contributions and achievements within such platforms—through features like published results, leaderboards, or digital certificates—has also proven to be an effective motivator. By celebrating student success publicly, these platforms help foster a sense of accomplishment and community, thereby encouraging broader participation.

Bringing together these design principles, technologies, and engagement strategies, the College Club Management platform addresses a critical gap in student life: the need for a unified, formal, and engaging space for club activity coordination. This system is designed to be scalable,customizable, and focused on delivering both administrative efficiency and a rewarding user experience.

III. SYSTEM ARCHITECTURE

The architecture of the College Club Event Management system is modular and divided into four key components: Event Management, Student Interaction, Backend Services, and Notification System. Each of these components plays a critical role in streamlining event organization, student participation, and communication across the platform.

A. Event Management

The Event Management module is responsible for the creation, scheduling, and oversight of club eventsEvent Creator:This sub-module allows club organizers or admins to initiate new events.

They can input key details such as event title, date, time, venue, description, and rules. The Event Creator ensures that each event is structured and validated before being submitted for management Event Manager:

Once events are created, the Event Manager handles their lifecycle. This includes editing existing events, deleting outdated ones, and tracking event performance.

B. Student Interaction

This module enables students to view, register for, and interact with club events through a responsive user interface. Student UI: The Student UI is the frontend interface designed using React. It displays event listings, event details, and notifications. It is the primary point of interaction for students to explore upcoming events and view outcomes of past events. Registration:

This section processes student event registrations. Upon selecting an event, students input their credentials and submit registration forms. This data is validated and securely passed to the backend, where it is stored and associated with the event record.

C. Back-end Services

This module powers the application's logic and data handling, facilitating smooth communication between the front-end and the database. Web Server (Node.js + Express):The web server handles HTTP requests and routes them appropriately. It connects the Student UI and Event Manager to backend services and performs authentication, API processing, and session handling. Event Database (PostgreSQL): All event and user-related data is stored in the PostgreSQL database. It manages structured tables for events, users, registrations, and winners. Efficient querying and indexing ensure fast access to data for display and analysis.

D. Notification System

To keep students informed and engaged, a dedicated notification system is integrated with the platform. Event Promotion: This service enables automated or manual promotion of events through banners, pop-ups, or featured cards in the UI. It encourages students to register and boosts visibility for lesser-known events. Email/SMS

E. Notification

Once an event is published or updated, this system sends alerts to registered users via email or SMS .these notification include reminders, last-minute changes, and announcements of winners post-event. This architecture ensures a seamless end-to-end experience—from event creation by club organizers to student participation and post-event engagement.

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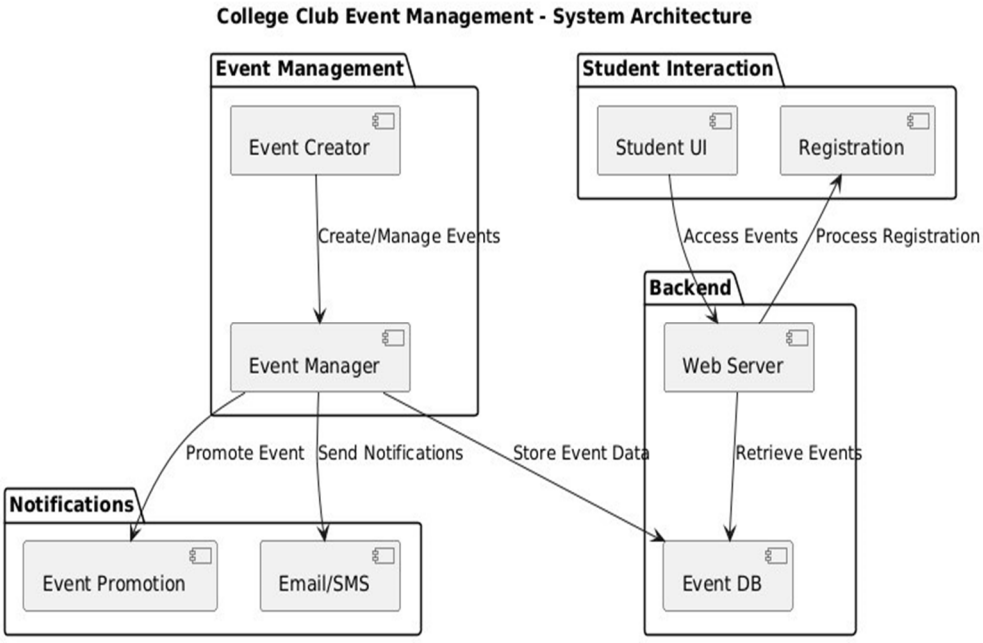


Fig 1 system Architecture

IV. SYSTEM DESIGN

The system design of the College Club Event Management platform focuses on creating a reliable, user-friendly, and scalable web application that enables both students and club organizers to manage events efficiently. The system adopts a modular design structure using the Model-View-Controller (MVC) architecture to separate concerns across different layers: user interface, business logic, and data handling.

A. Design Objectives

The College Club Event Management system is designed with a clear objective: to simplify and centralize the management of college-level club events while fostering greater student engagement. The platform provides a unified space where students can explore, register for, and track events, and where club organizers can manage events, registrations, and results. The system also ensures that users are kept informed through real-time updates and notifications.With scalability and modularity as its foundation, the architecture allows for future expansion, such as the integration of more clubs, features, or user types

B. System Flow Overview

The functional flow of the system begins with user authentication, where individuals sign up and log in as either students or club organizers. Throughout this process, both students and organizers receive timely in-app notifications and, optionally, email or SMS alerts regarding updates, registrations, or result announcements.

C. Authentication & User Roles

The authentication system uses secure login protocols and differentiates user roles to manage access privileges. Students are granted access to features such as event browsing, registration, and result viewing. On the other hand, club organizers, designated through role-based access control, can create and manage events, as well as upload winner information.

D. Event Management

The Event Management module is the backbone of the organizer interface. It enables clubs to define event parameters including the title, category, description, rules, date, venue, and prize details. Organizers can later edit or cancel events if necessary. which helps maintain transparency and motivates students by recognizing their participation and performance.

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E. Student Dashboard

From the student's perspective, the system offers a clean and responsive dashboard built using React.js. It lists all upcoming, ongoing, and completed events in an organized manner, making it easier for students to decide what to participate in. Registration is simplified through form- based interfaces that validate user input in real-time. The dashboard also provides an overview of the student's event history, including past

F. Notification System

To keep users updated, the notification system is integrated both within the web interface and, optionally, through external services like email or SMS APIs. In-app notifications inform users instantly about successful registrations, event changes, or newly announced results. These alerts are built using state management tools in React, ensuring dynamic and responsive communication. To expand the notification system's effectiveness, third-party APIs such as SendGrid (for emails) or Twilio (for SMS) can be integrated, ensuring users are alerted even when not actively logged into the application.

G. Database Design

The database schema is designed to maintain efficient data relationships and minimize redundancy. The users table contains user credentials and roles, while the events table holds information about each club event. The use of PostgreSQL allows complex queries and secure data storage, making it the optimal choice for this type of application.

H. API Design

Restful APIs form the communication bridge between the frontend and backend systems. These APIs handle essential operations such as user login, event retrieval, registration submission, and result publication.

I. Event Management

The Event Management module is the backbone of the organizer interface. It enables clubs to define event parameters including the title, category, description, rules, date, venue, and prize details. Organizers can later edit or cancel events if necessary. which helps maintain transparency and motivates students by recognizing their participation and performance.

V. IMPLEMENTATION

1) The implementation phase of the College Club EVENT Management platform involved transforming the proposed system design into a functional and interactive web-based application. The development process followed a modular and incremental approach, ensuring that each component could be developed, tested, and integrated independently. The system was developed using a full stack JavaScript architecture, with React.js for the frontend interface and Node.js along with Express.js for backend services. PostgreSQL was selected as the relational database management system to store and retrieve application data.
2) Front-end development was initiated using React, due to its ability to handle dynamic data changes and render components efficiently. The interface was designed with responsiveness and user experience in mind, allowing smooth navigation for both students and organizers. React Router was implemented to manage different views like the home page, event listing, event details form registration login and registration screens, and the organizer dashboard. State management was handled using React's built-in useState and useEffect hooks, with contextual state applied where global data like authentication status or user profiles needed to persist across routes.
3) The UI elements and overall layout were initially prototyped using Figma, enabling clear visualization of the platform's structure before development began. Icons and visual assets were integrated using the Icons8 plugin in Figma, providing a modern and accessible interface.

PostgreSQL served as the primary data storage engine. Its relational model allowed for structured storage of users, events, registrations, and results, with foreign keys used to maintain data integrity across relationships. SQL queries were executed through the pg package in Node.js, with parameterized queries used to prevent SQL injection.

VI. RESULT

The development and deployment of the College Club Event Management system led to a functional, scalable, and user-friendly web application capable of serving the dynamic needs of college-level club

Upon testing, the system demonstrated seamless functionality across its major modules. Students were able to create accounts, log in securely, and register for available events with minimal navigation. The system's design ensured that all visual and functional elements were responsive, performing reliably on both desktop and mobile screens.

From a technical standpoint, the backend APIs built using Node.js and Express handled multiple concurrent requests efficiently, with database operations successfully executing CRUD actions across all modules. Form validations, secure authentication, and proper role access control were confirmed through manual and automated tests. SQL queries executed against the PostgreSQL database returned accurate and consistent results, and no data integrity issues were detected during prolonged test runs.

Overall, the project successfully achieved its goals of creating a centralized, digital platform for club event management in a college environment. The implementation provides a valuable model that can be deployed in real-world college systems to replace traditional paper-based or ad-hoc event management processes. Future iterations can further enhance the system by incorporating analytics, feedback forms, real-time chat features, and mobile application support.

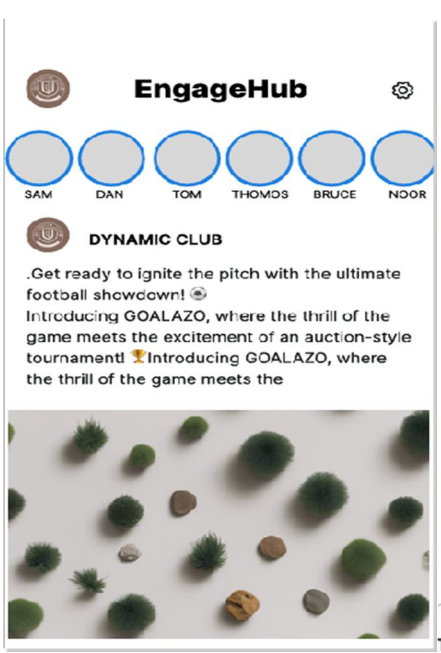


Fig 2 Engage hub app

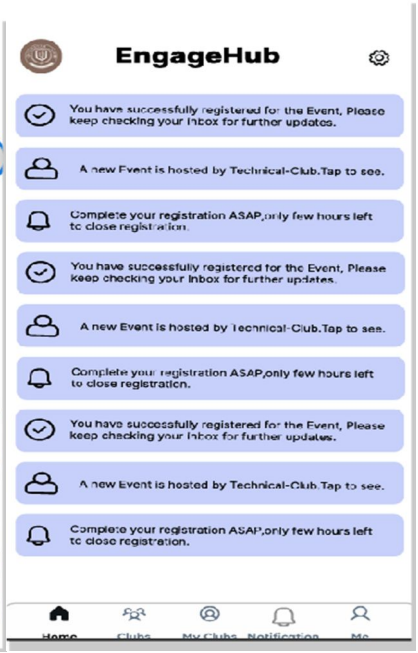


Fig 3 Engage hub app interface



Fig 4 . User Management

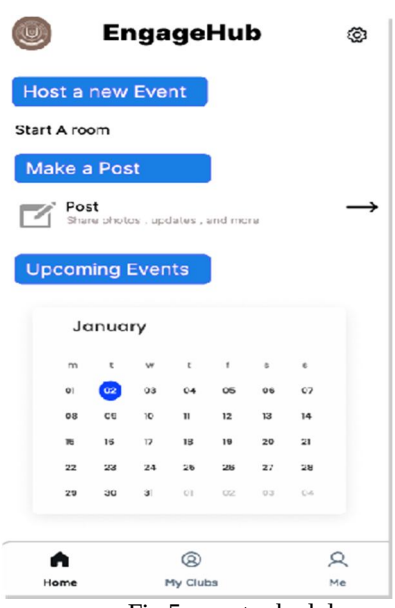


Fig 5. event schedule

VII. CONCLUSION

The College Club Event Management system was conceived and developed to address the growing need for an organized, centralized, and digital platform for managing college-level club activities. Through its thoughtful design and robust implementation, the platform successfully bridges the communication gap between students and club organizers, offering a seamless and engaging experience for all users. By enabling students to register, track, and participate in events online, and empowering organizers to manage events, handle registrations, and announce results through a secure backend, the application ensures smooth event operations and encourages wider participation in campus life. The project leveraged modern web development technologies, including React for the frontend, Node.js and Express.js for the backend, and PostgreSQL for data storage, to build a full-stack application that is secure, scalable, and user-friendly. The integration of design tools such as Figma and Icons8 contributed to an intuitive and visually appealing interface, enhancing the user experience. In-app notification systems, real-time data handling, and role-based access further improved the responsiveness and reliability of the platform.

In conclusion, this project not only meets the functional requirements outlined at the beginning but also provides a foundation for future enhancements such as event analytics, feedback collection, and mobile compatibility. The successful development and testing of the College Club Event Management system demonstrate its practical utility and potential impact in real-world educational environments. It is a step forward in digitizing campus activities and promoting student engagement through efficient, accessible, and transparent event coordination.

VIII. ACKNOWLEDGEMENT

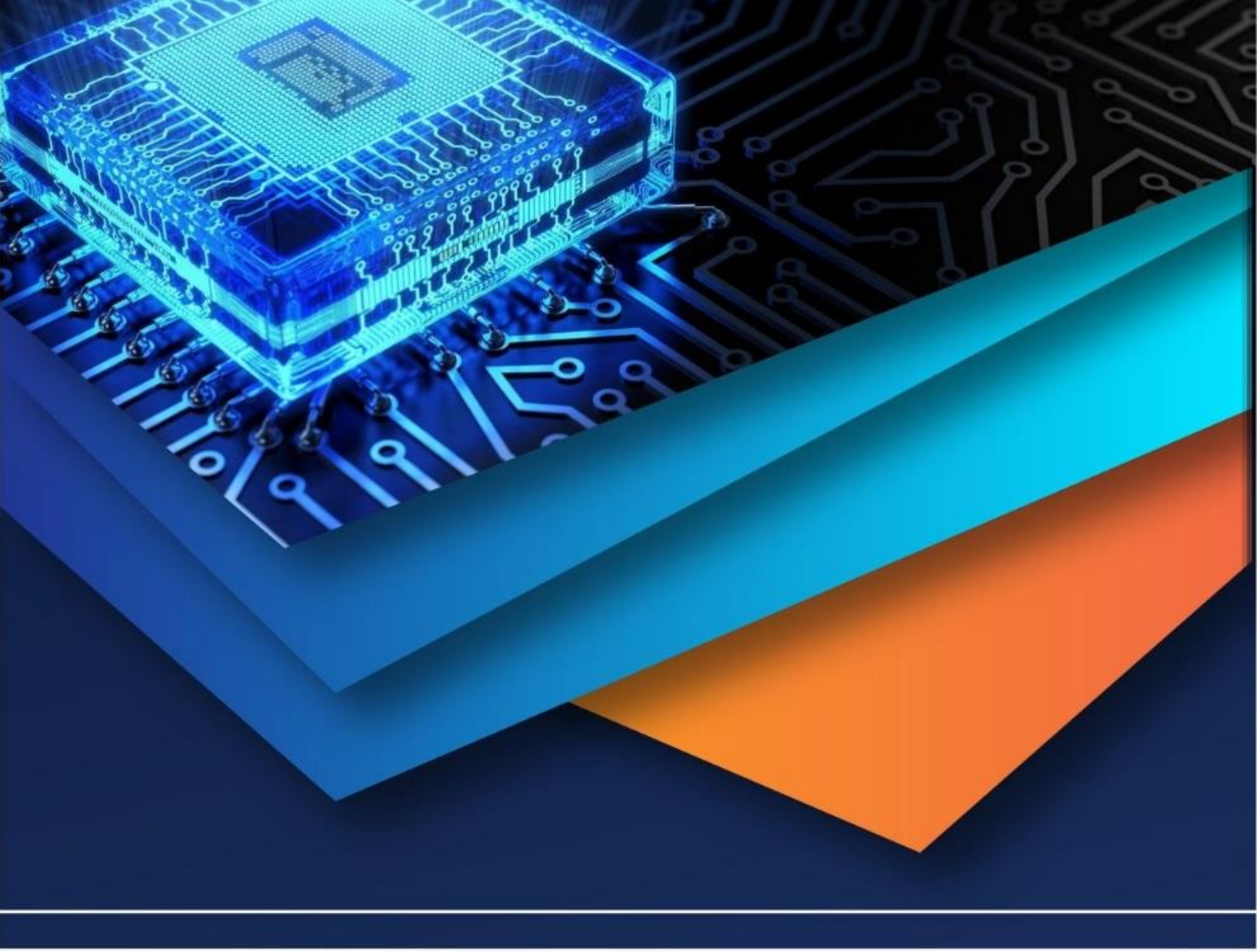
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